

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Claims 1 to 71 (cancelled).

72. A composition for injectable delivery of osteogenic proteins comprising an osteogenic protein and a hyaluronic acid ester, wherein the composition is in the form of a cylindrical rod suitable for injecting or implanting in solid state into a body.

73. The composition of claim 72, wherein the osteogenic protein is selected from the group consisting of members of the bone morphogenic protein (BMP) family.

74. The composition of claim 72, wherein the osteogenic protein is selected from the group consisting of BMP-2, BMP-4, BMP-5, BMP-6, BMP-7, BMP-10, BMP-12, BMP-13, or MP52.

75. The composition of claim 72, wherein the osteogenic protein is BMP-2

76. The composition of claim 72, wherein the osteogenic protein is BMP-6.

77. The composition of claim 72, wherein the osteogenic protein is BMP-12.

78. The composition of claim 72, wherein the osteogenic protein is BMP-13.

79. The composition of claim 72, wherein the osteogenic protein is MP52.

80. The composition of claim 72, further comprising an excipient selected from the group consisting of pharmaceutically acceptable salts, polysaccharides, peptides, proteins, amino acids, synthetic polymers, natural polymers, and surfactants.

81. The composition of claim 72, further comprising a bone resorption inhibitor.

82. The composition of claim 81, wherein the bone resorption inhibitor is a bisphosphonate.
83. The composition of claim 82, wherein the bisphosphonate is selected from the group consisting of alendronate, cimadronate, clodronate, EB-1053, etidronates, ibandronate, neridronate, olpadronate, pamidronate, risedronate, tiludronate, YH 529, zolendronate, and pharmaceutically acceptable salts, esters, acids, and mixtures thereof.
84. The composition of claim 81, further comprising an excipient selected from the group consisting of pharmaceutically acceptable salts, polysaccharides, peptides, proteins, amino acids, synthetic polymers, natural polymers, and surfactants.
85. The composition of claim 72, wherein the hyaluronic acid ester comprising from about 50 percent to about 100 percent hyaluronic acid esterification.
86. The composition of claim 72, wherein the hyaluronic acid ester is at least 50% esterified.
87. The composition of claim 72, wherein the hyaluronic acid ester is at least 60% esterified.
88. The composition of claim 72, wherein the hyaluronic acid is at least 65% esterified.
89. The composition of claim 72, wherein the hyaluronic acid is at least 75% esterified.
90. The composition of claim 72, wherein the hyaluronic acid is at least 80% esterified.
91. The composition of claim 72, wherein the hyaluronic acid is 100% esterified.
92. The composition of claim 72, wherein the hyaluronic acid is Hyaff11p65.

93. The composition of claim 72, wherein the hyaluronic acid is Hyaff11p65 and the osteogenic protein is BMP-12.

94. The composition of claim 72, wherein the hyaluronic acid is Hyaff11p65 and the osteogenic protein is BMP-13.

95. The composition of claim 72, wherein the hyaluronic acid is Hyaff11p65 and the osteogenic protein is MP52.

96. The composition of claim 72, wherein the hyaluronic acid ester is a cross-linked hyaluronic acid.

97. The composition of claim 72, wherein the diameter of said cylindrical rod is between about 0.5 to 1.5 mm.

98. The composition of claim 72, wherein the length of said cylindrical rod is between about 2 cm and about 5 cm.

99. A composition for treating osteoporotic bone prepared by a process comprising the steps of:

(a) mixing an osteogenic protein and an hyaluronic acid ester to form an osteogenic mixture; and

(b) forming and drying the osteogenic mixture into a cylindrical rod suitable for injecting or implanting in solid state into a body.

100. The composition of claim 99, wherein the step of mixing comprises mixing the osteogenic protein and hyaluronic acid ester with an excipient selected from the group consisting of pharmaceutically acceptable salts, polysaccharides, peptides, proteins, amino acids, synthetic polymers, natural polymers, and surfactants.

101. The composition of claim 99, wherein the step of mixing further comprises mixing the osteogenic protein and hyaluronic acid ester with a bone resorption inhibitor.

102. The composition of claim 101, wherein the bone resorption inhibitor is a bisphosphonate.

103. The composition of claim 101, wherein the bisphosphonate is selected from the group consisting of alendronate, cimadronate, clodronate, EB-1053, etidronate, ibandronate, neridronate, olpadronate, pamidronate, risedronate, tiludronate, YH 529, zolendronate, and pharmaceutically acceptable salts, esters, acids, and mixtures thereof.

104. The composition of claim 101, wherein the step of mixing further comprises mixing the osteogenic protein, hyaluronic acid ester, and bisphosphonate with an excipient selected from the group consisting of pharmaceutically acceptable salts, polysaccharides, peptides, proteins, amino acids, synthetic polymers, natural polymers, and surfactants.

105. The composition of claim 99, wherein the hyaluronic acid ester is prepared by hydration or solubilization of insoluble or partially soluble particles, films, fibers, non-woven pads, or sponges of hyaluronic acid benzyl esters in water, an organic solvent or an aqueous buffer.

106. The composition of claim 99, wherein the osteogenic protein is selected from the group consisting of members of the bone morphogenic protein (BMP) family.

107. The composition of claim 99, wherein the osteogenic protein is selected from the group consisting of BMP-2, BMP-4, BMP-5, BMP-6, BMP-7, BMP-10, BMP-12, BMP-13, and MP52.

108. The composition of claim 99, wherein the osteogenic protein is BMP-2

109. The composition of claim 99, wherein the osteogenic protein is BMP-6.
110. The composition of claim 99, wherein the osteogenic protein is BMP-12.
111. The composition of claim 99, wherein the osteogenic protein is BMP-13.
112. The composition of claim 99, wherein the osteogenic protein is MP52.
113. The composition of claim 99, wherein the step of mixing comprises mixing the osteogenic protein and hyaluronic acid ester with a solvent; and wherein the step of forming and drying the osteogenic mixture into a cylindrical rod comprise extruding the osteogenic mixture in a nonsolvent.
114. The composition of claim 99, where in the step of forming and drying the osteogenic mixture comprises extruding the osteogenic mixture in a nonsolvent.
115. The composition of claim 114, wherein the nonsolvent is ethanol or water.
116. The composition of claim 99, where in the step of forming and drying the osteogenic mixture comprises extruding the osteogenic mixture into air and drying.
117. The composition of claim 99, wherein the diameter of said cylindrical rod is between about 0.5 to 1.5 mm.
118. The composition of claim 99, wherein the length of said cylindrical rod is about 2 cm to about 5 cm.
119. A method for preparing a composition of claim 72 comprising the steps of:
 - (a) mixing an osteogenic protein with a hyaluronic acid ester to form an osteogenic mixture comprising the hyaluronic acid ester in an amount of between about 1 to about 50 (w/v) percent;
 - (b) molding the osteogenic mixture to form a rod-shaped product; and
 - (c) drying the rod-shaped product from step (b).

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120. A method of treating a mammal having a bone defect comprising
administering to the site of bone defect an effective amount of a composition of claim 72.